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Field Service Procedure

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Installation of Flat Display Panel Upgrade Kit on NM6000

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Installation of Flat Panel Display Upgrade Kit on NM6000

Installation Procedure

The hardware supplied in this kit allows installation of a flat panel display in place of the existing CRT in the Narkomed 6000.

1. Turn the System Power switch to STANDBY, and remove AC power from the machine.
2. Pull out all circuit breakers at the back of the power supply.
3. Remove the upper left (facing the back of the machine) back panel from the machine. See Figure 1.

Separate the in-line fan connector.
4. At the front of the machine, remove the table lamp panel below the monitor.
5. If applicable, remove the two adjustment shaft extensions that project below the monitor shelf by pulling them straight off. (See illustration.)
6. Disconnect the power, video and touch screen cables from the monitor.
7. Remove the four screws from the underside of the monitor shelf, and slide the monitor out the back of the machine.
8. Separate the in-line connector for the degaussing coil. See Figure 2.
9. Remove the six screws holding the front bezel assembly to the cabinet, and carefully remove the bezel.
10. Determine whether the machine has separate video and touchscreen cables, or a single branched cable (P/N 4115606) with two connectors.

If the machine has separate video and touchscreen cables, these cables must be replaced with the later design (P/N 4115606) branched cable. Before removing the existing cables, tape a guide wire or the new cable to one of the original cables, then carefully guide the new cable through the conduit.
11. Attach the flat panel power PCB assembly to the power PCB mounting plate with four 4-40 x $\frac{3}{8}$ in. btn hd skt screws and #4 int-t lock washers. See Figure 3.
12. Install the power PCB mounting plate in the floor of the display compartment with two 8-32 x $\frac{5}{16}$ in. btn hd skt screws and #8 int-t lock washers.

Join Cable "A" to the power wire harness as shown in Figure 3.
13. Attach the small PCB assembly supplied with the flat panel display to the back of the lamp panel with four 6-32 x $\frac{1}{4}$ in. btn hd skt screws and #6 int-t lock washers.
14. Install two pieces of grommet strip (P/N 4109442) in the slot in the floor of the display compartment as shown in Figure 4.

Installation Procedure (continued)

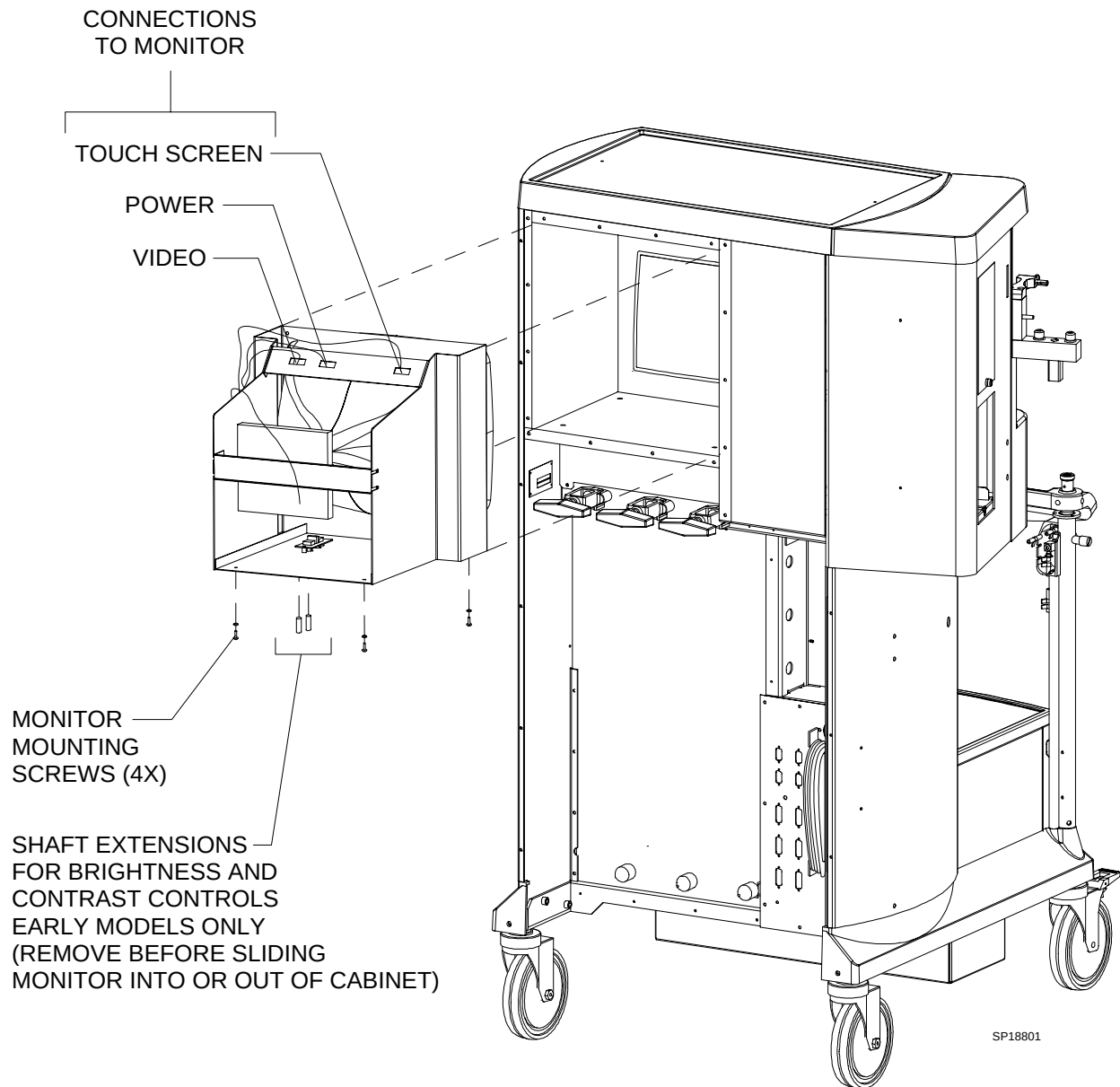
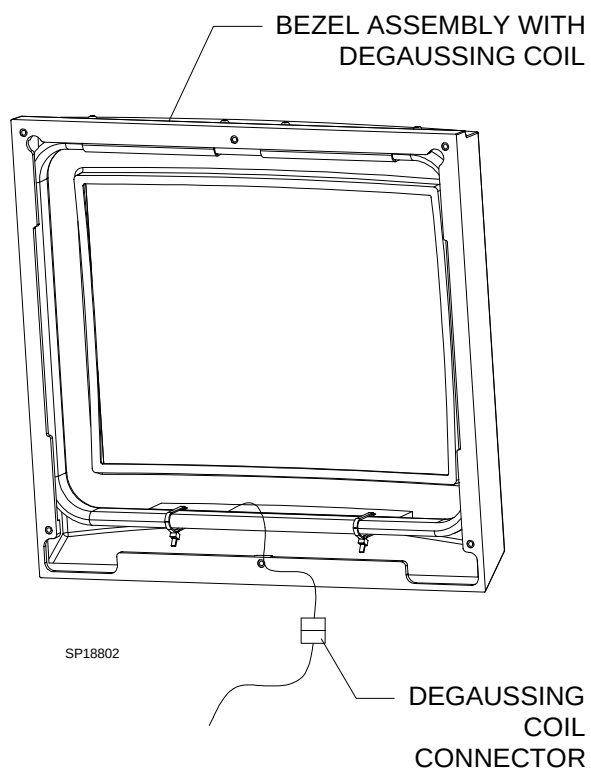


FIGURE 1. Removal of CRT Assembly

Installation Procedure (continued)



15. Install the ribbon cable clip as shown in Figure 4.
16. Install the flat panel display assembly with six 8-32 x 5/16 in. btn hd skt screws and #8 int-t lockwashers.
17. Join the power, video, touchscreen and ribbon connectors to the flat panel display assembly. See Figure 3.
18. Remove the fan from the back panel. It is not used with the flat panel display arrangement.
19. Reinstall the back panel on the machine.

FIGURE 2. Bezel Assembly Removal

Installation Procedure (continued)

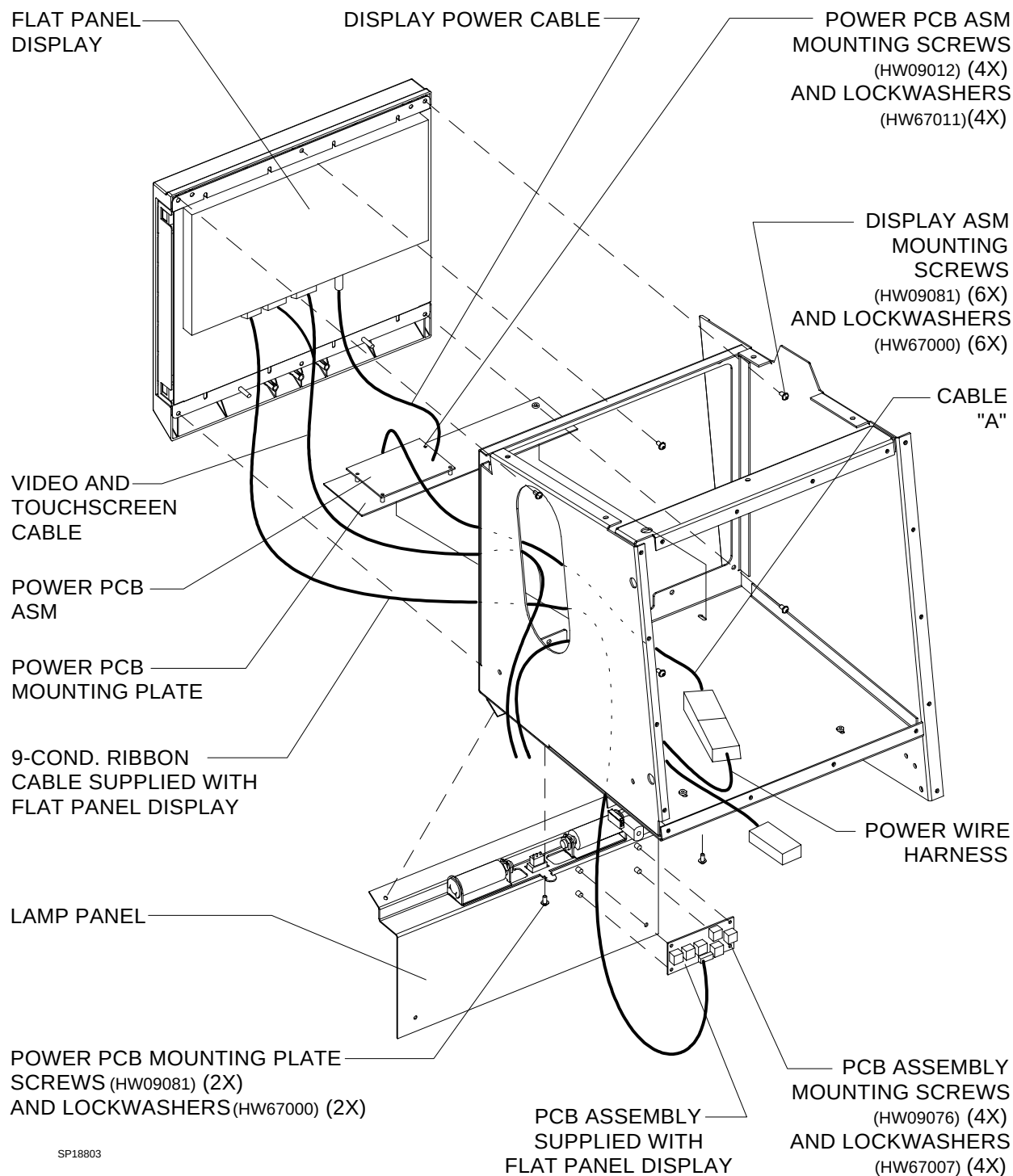


FIGURE 3. Flat Panel Display Installation

Installation Procedure (continued)

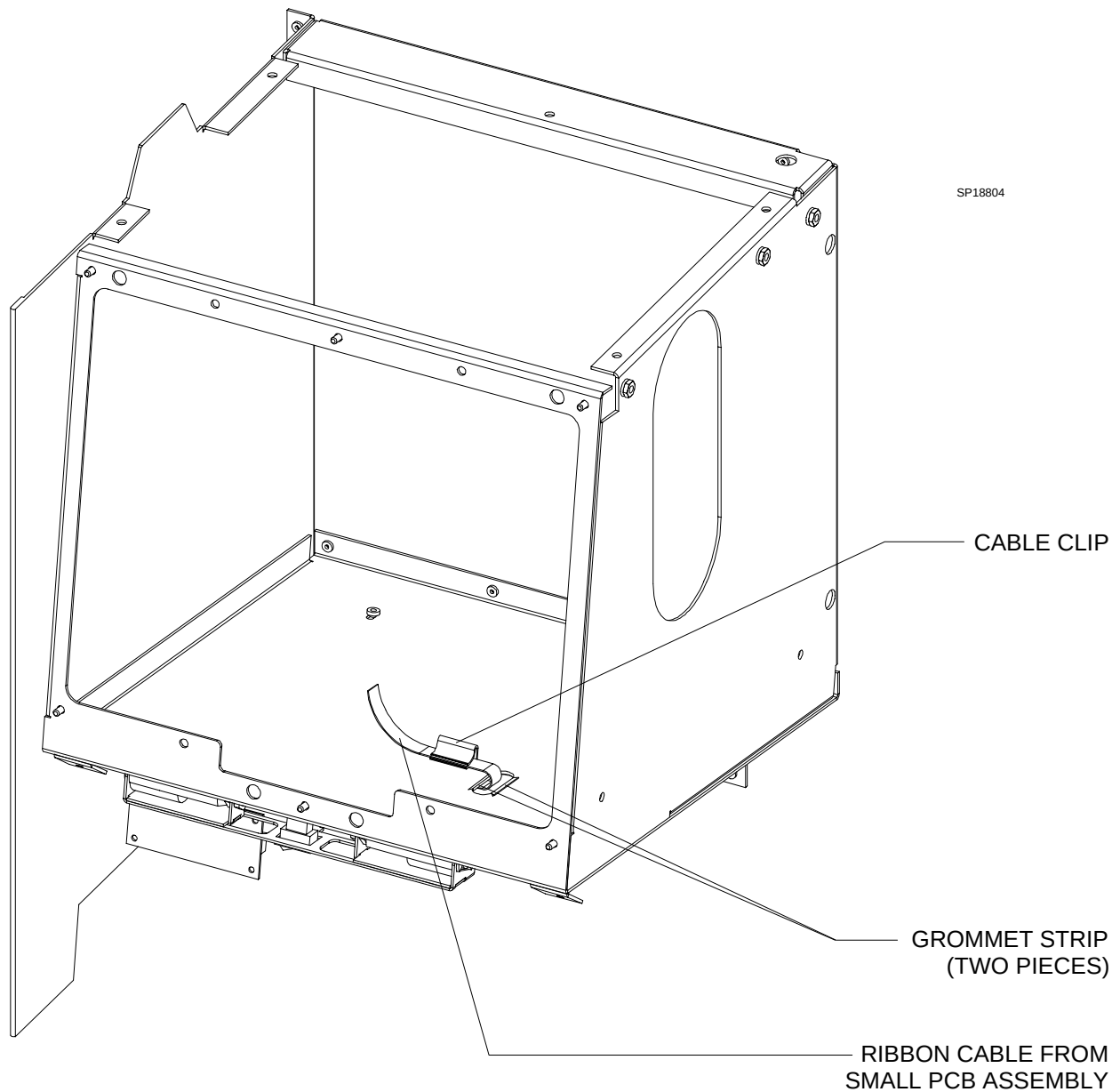


FIGURE 4. Detail of Ribbon Cable Installation

Installation Procedure (continued)

20. With power Off, connect a keyboard (P/N 4115133) to the DIN connector on the underside of the NM6000 cockpit area.
21. Power up the NM6000.
22. On the keyboard connected to the NM6000, press the “Windows” key or CTRL-F9 then ALT-F9 then CTRL-ESC to call up the start menu.
23. Click on “Settings” then “Control Panel”. On the control panel dialog, double click the “Display” icon.
24. On the Display Properties dialog box select the “Settings” tab. See Figure 5.

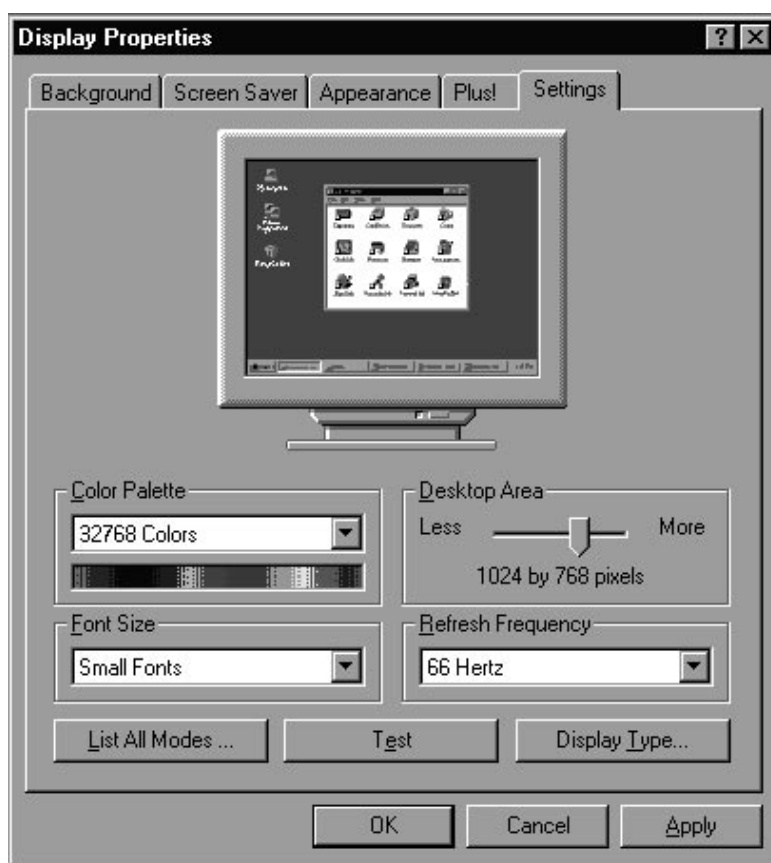


FIGURE 5. Display Properties Box

Installation Procedure (continued)

25. Touch the 'Display Type' key. If the adapter type is 'ATI Technologies, Inc. 3D PRO Turbo PC2TV', then press OK and skip to Step 27.

If the proper display adapter type is not available, perform the following steps:

- 26.1 Select: Change; 'ATI Technologies'; 'have disk'; 'browse'. At the Locate File dialog box (A:\ is not accessible) click OK.

- 26.2 Select: 'My Computer'; 'Saturn (C:)'. Select the 'Temp utils' folder, the 'Ati' folder, the Nt40 folder. Select the 'Ati.inf' file and press ENTER.

- 26.3 The file path should now be 'C:\Temp\Utils\ati\NT40' select OK

- 26.4 Select 'ATI Technologies, Inc. 3D PRO Turbo PC2TV'. Select Yes' at the 'Third Party Drivers' dialog box.

- 26.5 A dialog box shall appear indicating the 'Drivers were successfully installed!'. Click 'OK', close all open windows, turn the System Power switch to STANDBY.

- 26.6 Repeat Steps 21 thru 25.

26. Adjust the 'Color palette' to 65K colors if possible. Otherwise use the 32.7K selection.

27. Verify the 'Desktop Area' is set to 1024 by 768 pixels, and the 'Refresh Frequency' is set to 66 Hertz. Adjust these settings as necessary.

28. Click the "Test" button, then click OK to view the bitmap display.

29. Click "Yes" if the bit map is displayed properly.

30. Click "Apply", then click OK to close the Display Properties dialog box.

Installation Procedure (continued)

Brightness, Contrast, Phase and Position adjustments:

31. Remove the table lamp panel below the display, and pull it forward far enough for access to the small PCB assembly attached to the back of this panel. The control keys on this assembly are used for selecting display functions, and for making the display adjustments. See Figure 6.

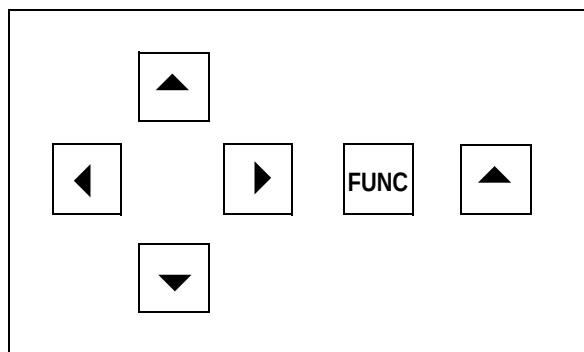


FIGURE 6. OSD Control Keys

32. Press the FUNC key to bring up the On Screen Display (Figure 7).
33. Verify the width setting is 127.

Note: **Do Not** Adjust width - as it affects brightness, contrast and phase.

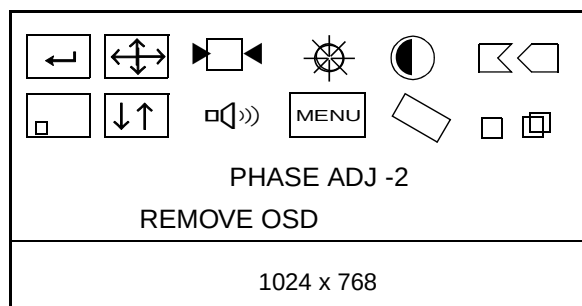


FIGURE 7. On Screen Display

34. Enter the service mode and touch the Service Monitors softkey to display the service monitors notebook.

NOTE: If the touch screen is completely unresponsive, perform the Advanced Touch Screen Calibration (refer to Section 5.8A in the Narkomed 6000 Technical Service Manual).

35. Touch the Screen tab to display the Screen Functions page as shown in Figure 8.

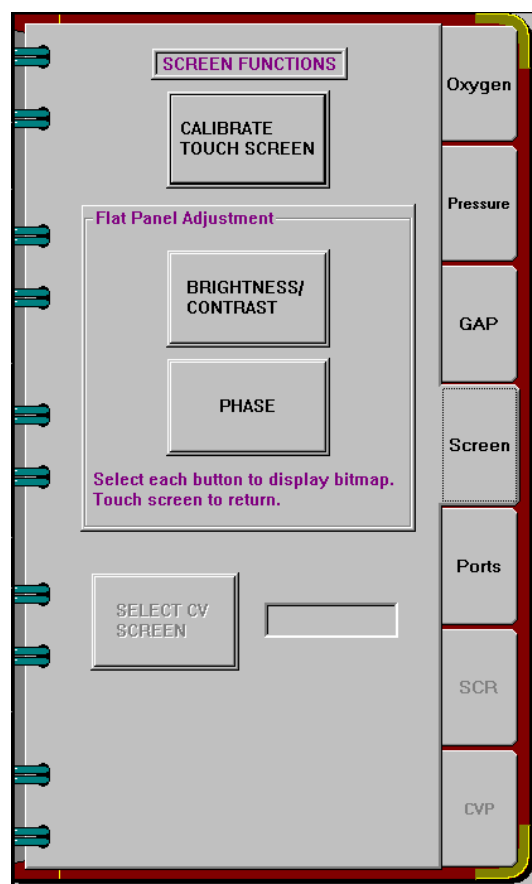


FIGURE 8. Screen Functions Page

Installation Procedure (continued)

Brightness and Contrast Adjustments:

36. Press the BRIGHTNESS/CONTRAST button on the Screen Functions page to display the gray-scale test pattern.
37. Press the Function key (Figure 6) to bring up the On Screen Display (OSD) (Figure 7).
38. Use the ► key to select Brightness, then press the Function key.
39. Press the ◀ key (repeatedly) to step the brightness scale to zero, then press the Function key to enter that value.
40. Use the ► key to select Contrast, then press the Function key.
41. Use the ◀ or ► key to step the contrast scale to 32, then press the Function key to enter that value.

NOTE: For the following adjustments, your angle of view should be perpendicular to the center of the screen, and in normal ambient light.

42. Select the Brightness function on the OSD, and press the Function key.
43. Use the ► key to increase the brightness until the second and third shaded bars in the lower left portion of the screen are barely distinguishable. Press the Function key to enter that setting.
44. Select the Contrast function on the OSD, and press the Function key.
45. Increase the contrast until the brightest two shades in the lower right portion of the screen are barely distinguishable from one another.

If necessary, return to the Brightness function and readjust brightness until the two darkest shades in the lower half of the screen are barely distinguishable. If you readjust brightness, contrast may need to be adjusted again.

46. When the desired settings are achieved, select Remove OSD and press the Function key.
47. Touch the NM6000 screen anywhere to return to the service monitors notebook.

Phase Adjustment:

48. Press the PHASE button on the Screen Functions page to display the full screen text pattern.

NOTE: The following adjustment should be performed at normal room temperature in order to provide a stable image over the range of temperatures expected in normal use of the NM6000.

If the phase window is very small (0 - 5 counts), restore factory defaults and repeat the adjustment procedure.

49. Press the Function key to bring up the OSD.

NOTE: The following line of text is displayed on the OSD under the icons: "Phase Adj ± #". This is a readout of the temperature compensation circuit and is *not* the phase setting. See Figure 7.

Installation Procedure (continued)

While observing the upper right area of the text screen:

51. Use the ◀ key to decrease the phase adjustment until the characters show distortion or flicker, then back up one step.

If you did not go below zero and start down the scale again on the phase adjustment screen, record the setting.

If you went below zero and started down the scale again to obtain a setting, find that number to the left (counter-clockwise) of the shaded area in the outer row of the chart. Record its corresponding number in the inner row. For example, if your setting is 27, then record a -5.

52. Use the ▶ key to increase the phase adjustment until the characters show distortion or flicker, then back down one step.

If you did not go above 31 on the phase adjustment scale, record the setting.

If you went above 31 and started up the scale again to obtain a setting, find that number to the right (clockwise) of the shaded area in the outer row of the chart. Record its corresponding number in the inner row. For example, if your setting is 3, then record a 35.

53. Find the algebraic mean between your recorded numbers; if the mean value is 5, 6 or 7, add 2 to the value. (Example: If the mean value is 6, then the entered value will be 8.) Set the phase adjustment to that value. Press the Function key to enter the value.

Position Adjustment:

54. Use the ▶ key to select VIDEO POSITION ADJUST, then press the Function key.

55. Use the ▶, ◀, ▼, ▲ keys to align the video image until all information in the title bar, selection boxes at the top and bottom, and the white border lines, are visible on both sides of the screen.

-
56. Select Remove OSD and press the Function key.

57. Touch the NM6000 screen anywhere to return to the service monitors notebook.

58. Reinstall the lamp panel on the machine; route the ribbon cable from the small PCB up through the slot and cable clamp as shown in Figure 4.

59. Perform the PMC Procedure as given in the NM6000 Service Manual.

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